

of the Army budget by 1991, much closer to the current level of 70 percent than the 81 percent resulting from the first option. This option would fail, however, to retain the current number of military personnel.

Option III--Place a More Balanced Emphasis

The last option would attempt to strike a balance between the two previous ones. It would fund O&M at the same level as the second approach, maintain the current size of the active and reserve forces, and require larger reductions in investment accounts. Thus, an Army of today's size would be modernized slowly over the next five years.

With O&M funds increasing and personnel costs held constant, the burden of achieving zero real growth would fall most heavily on the investment accounts. Indeed, by 1991 the investment accounts would be reduced in real terms by 16 percent below their 1987 levels, less than the Option I reduction of 37 percent but more than Option II's 7 percent. As in all the approaches accommodating zero budget growth, fewer units would be equipped with modern weapons than envisioned in the Army's goals. Again, Option III occupies a middle position, with Option II, which emphasizes investment, providing more modernized units, and Option I fewer (see Summary Table 2).

CONCLUSION

During the 1987-1991 period, the Army would like to continue to improve its readiness and sustainability, to field more new weapons, and to expand the size of its reserve force. Specifically, the Army would like to fly its aircraft more hours per month; to increase the size of its stockpiles of munitions and repair parts; to continue to equip its troops with newer, more capable tanks, attack helicopters, and radios; and to add almost 51,000 reservists to its forces. The CBO estimates that, in order to meet these goals by 1991, the Army would need average annual real growth in its budgets of about 6 percent.

Obviously, the Army would be unable to meet all of its goals--or even come near meeting them--if its budget does not increase in real terms. If the Army wished to maintain its current numbers of personnel and high level of readiness spending in the absence of budget growth, then it would face substantial reductions--on the order of 16 percent below 1987 levels--in its investment accounts. Avoiding the reduction in investment while maintaining high readiness spending, could require cuts from the 1987 numbers of reserve or active-duty personnel.



CHAPTER I

INTRODUCTION

In fiscal year 1986, the U.S. Army received \$72.4 billion dollars in budget authority--or \$74.9 billion in fiscal year 1987 dollars--to pay for personnel, operating costs, and new investments in weapons, real property, and other equipment. This amount represented 20 percent real growth over the 1982 Army budget of \$52.2 billion--the equivalent of \$62.2 billion in 1987 dollars. The increase has underwritten a wide variety of improvements in Army equipment and personnel. But these enhancements, important as they are, have not met all of the Army's specified goals. Over the next five years, the Army seeks, among other things, to maintain a high level of readiness, to increase its ability to sustain combat, to continue modernization of its equipment, and to augment its reserve personnel.

The Congress has asked the Congressional Budget Office (CBO) to estimate the cost of meeting the Army's self-imposed goals during the period from 1987 through 1991. Since meeting these goals would require implementing and enhancing numerous separate Army programs, the actual cost would depend on the specific means chosen to fulfill the various objectives and on the timetable established for realizing their attainment. In general, however, the Army would need funds to purchase more and better weapons, to improve troop training, and to maintain the high quality of its personnel. Meeting the goals, therefore, would undoubtedly require increasingly larger annual budgets from 1987 through 1991.

In recent years, however, the Congress has not approved any real growth in the Army's budget. The budget for 1986 was 6 percent less in real terms than it was in 1985, and the budget approved for 1987 is 1 percent lower in real terms than that for 1986. In view of this trend, it is questionable whether the Congress will appropriate sufficient funds to achieve the Army's goals and, if not, what strategies might be used to allocate the limited funds that would be available under the constraint of no real growth in the Army's budget from 1987 levels.

IMPROVEMENTS FROM 1982 THROUGH 1986

During the five years from 1982 through 1986, the Army received \$358.9 billion in appropriated funds as measured in constant 1987 dollars. The

money was used to support Army personnel and operations and to buy the items needed to equip a modern Army. Although the exact impact of the expenditure of these funds on the state of the Army is difficult to quantify, four commonly used characteristics can describe the condition of a military unit: readiness, sustainability, modernization, and force structure.

The Army's main priority during the early 1980s was to improve the readiness of its forces by investing in the maintenance of its equipment and facilities, by emphasizing realistic training methods, and by improving the quality of its recruits. The Army also emphasized building up its stocks of munitions and spare parts to provide reserves in the event of a protracted war. In addition, the Army attempted to redress the numerical imbalance between the Warsaw Pact and NATO forces by buying more, technically superior weapons. Finally, the Army was able to increase the total number of combat units without adding active personnel to its force.

Readiness

The ability of a force to perform its mission on short notice is referred to as readiness. Training to keep the troops alert and proficient at their missions, providing equipment that is reliable and easily maintained, and stationing war-fighting equipment in likely trouble spots all contribute to a high level of readiness. In his *Annual Report to the Congress, Fiscal Year 1983*, Secretary of Defense Caspar W. Weinberger emphasized his commitment to increasing both the personnel and material readiness of U.S. conventional forces. To that end, the Army has significantly bettered the quality of the people in its forces. For example, the fraction of Army recruits with high school diplomas increased from 86 percent in 1982 to 90 percent in 1986. Similarly, the portion of new Army recruits scoring in the lowest acceptable category on the Army's placement test (Category IV) has decreased from 19 percent in 1982 to 10 percent in 1986. In short, the quality of the Army recruit--and thus the Army as a whole--has improved since 1982.

In addition, the Army has attempted to improve the competence of its soldiers by increasing the amount and realism of training they receive. The Army has increased the average number of hours a crew flies per month. Furthermore, more crews are flying more aircraft in the Army now, and the total number of annual aircraft flying hours has increased by almost 16 percent--from about 1.6 billion in 1982 to 1.8 billion in 1986.

Prepositioning equipment increases readiness by reducing the amount of equipment that would have to be shipped overseas in the event of war, thereby freeing transport aircraft to carry troops, rather than equipment.

The Army's program to place equipment in Europe was initiated in 1961 and is referred to as POMCUS (for Pre-positioned Materiel Configured to Unit Sets). From 1982 through 1986, the Army added 130,000 short tons of equipment to its POMCUS stocks and progressed about a fifth of the way to its objective of storing equipment for six divisions in Europe.

Finally, during the 1982-1986 period, the Army has improved the condition of its depots and other real property and reduced the backlog of facilities needing maintenance. An indirect benefit of such maintenance work is improved troop morale, which ultimately results in increased readiness. In terms of real property maintenance, the Army's backlog was reduced from \$2.4 billion in 1982 to \$1.4 billion in 1986; family housing backlog was reduced from \$0.9 billion to \$0.5 billion.

Sustainability

The ability of a force to sustain wartime operations for extended periods depends on the size and availability of its supplies and on its capability to repair damaged equipment. Thus, the size of munition and spare parts stockpiles and the adequacy of maintenance and repair facilities affect a force's sustainability.

Improvements in sustainability also received attention from the Army during the past five years, specifically in terms of increased ammunition procurement. From 1982 through 1986, \$12.7 billion was budgeted for ammunition, and as a consequence, the Army increased the percentage of its war reserve stocks of munitions--measured in dollar terms--from 75 percent to 85 percent of its desired objective. ^{1/} Similar increases in other war reserve stocks, such as those of spare parts, were also attained--from 36 percent to 57 percent of the objective from 1982 through 1986. In addition, depot maintenance and repair facilities were upgraded. As a consequence of these expenditures, the Army has improved its ability to sustain combat for extended periods.

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1. Although a more appropriate measure of war reserve stocks would be to tabulate quantities of various types of munitions, it would be very difficult to consolidate varying levels of many munitions into one quantitative value. The Army, therefore, determined how much it would cost to amass the appropriate number of each munition and measured its progress in terms of cumulative funds spent toward filling the stocks. The Army has since developed an alternative method that attempts to take into account the varying levels of many different types of munitions (see p. 13).

Modernization

In 1982, the Army accelerated its ambitious program to modernize its equipment. Among other things, it intended to replace many of its tanks, personnel carriers, utility and attack helicopters, and anti-aircraft guns with newer weapons. Specifically, from 1982 through 1986, the Army purchased 4,040 M1 tanks, 3,171 Bradley Fighting Vehicles (a replacement for the older M113 personnel carrier), and 440 UH-60 and 453 AH-64 helicopters. ^{2/} In addition, the Army has continued to field new and more sophisticated air defense missiles, like Stinger and Patriot, and is beginning to update its communications systems (see Table 1).

All told, the Army spent almost \$83 billion to procure modern weapons during the 1982-1986 period. The impetus for this initiative was to counter perceived increases in numbers and capability of Soviet and Warsaw Pact forces. As a result of the more than \$80 billion invested in modern equipment, the Army feels that it is better prepared today if it should have to fight an intense war with the Warsaw Pact in Central Europe.

Force Structure

Force structure refers to the number of soldiers in the Army and the units to which they are assigned. In fiscal year 1982, the Army included 780,400 active military personnel and 664,300 reservists, organized into 16 active and 8 reserve divisions. (The following box defines terms used in describing force structure and other aspects of the Army's organization.) By reorganizing its 16 existing active divisions, the Army was able to add two new active light infantry divisions (LIDs) to its force structure without increasing the total number of its active-duty personnel. ^{3/} Thus, the Army now has 18 active divisions--two more than in 1982--but the active Army's strength at the end of the year (end strength) has remained roughly constant at about 780,000 (see Table 2). On the other hand, the size of the reserves has grown from 664,300 in 1982 (including both the Army Reserve and the

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2. The pieces of equipment purchased by the Army in any given year may not actually enter the Army's inventory until two to three years later, because of the time needed to produce a weapons system. Thus, some of the weapons purchased in 1986 may not actually enter the Army's stores until 1988.
 3. Reported by Secretary of Defense Caspar W. Weinberger, *Annual Report to the Congress, Fiscal Year 1985*. The LID is a stripped-down version of the existing Infantry Division, including approximately 10,000 rather than 17,000 soldiers.

Army National Guard) to 761,200 personnel today, an increase of 15 percent. During this period, the reserves also added two new divisions.

Budget Trends, 1982-1986

Compared with the Army of 1982, today's Army is certainly a more modern and more capable force that could sustain combat for longer periods. These

TABLE 1. CUMULATIVE QUANTITIES OF MODERN WEAPONS SYSTEMS PROCURED FROM FISCAL YEARS 1982 THROUGH 1986

Weapons System	Beginning 1982	End of 1986
M1 Tank	968	5,008
Bradley Fighting Vehicle	500	3,671
UH-60 Utility Helicopter	337	777
AH-64 Attack Helicopter	0	453
Multiple Launch Rocket System (Rockets/ Launchers)	3,714/ 44	188,322/ 348
Stinger Shoulder-Launched Air Defense Missile	4,535	15,089
Patriot Long-Range Air Defense Missile (Missiles/ Launchers)	247/ 10	2,175/ 67
Hellfire Antitank Missile	0	20,832
SINGARS Radios ^a /	0	12,500
5-Ton Trucks	971	18,322
10-Ton Trucks	638	6,853

SOURCES: Congressional Budget Office from testimony by Dr. Jay R. Sculley, Lt. Gen. James H. Merryman, Maj. Gen. Louis C. Menetrey, and Brig. Gen. Ellis Parker before the Subcommittee on Tactical Warfare of the Senate Armed Services Committee (March 1982); *Department of the Army Procurement Programs, Congressional Data Sheets in Support of the FY 1987 President's Budget* (February 1986); and Department of Defense, *Selected Acquisition Reports* (December 1985).

a. SINGARS = single-channel ground and airborne radio system.

ARMY TERMS

Active--The portion of the Army that includes full-time military personnel and units that perform their mission 24 hours a day, 365 days a year, in peacetime as well as in war.

Reserves--The portion of the Army including both the Army Reserve and the Army National Guard, formed primarily by part-time personnel who are ready to report for full-time duty in the event of a national emergency. A portion of reserve personnel are full-time reservists who provide training and administration.

Corps--An administrative organization staffed and equipped to control two to five divisions. The corps' artillery battalions, communications units, supply, medical, maintenance, engineer, and other units provide divisions with the support they need to fight.

Division--A unit consisting of 10,000 to 17,000 personnel and associated equipment.

Light Infantry Division--A unit designed to be deployed rapidly where needed, typically with few armored weapons and a high ratio of combat to support personnel. The active Army now contains four light infantry divisions.

Heavy Division--A unit equipped with armored vehicles such as tanks and armored personnel carriers. The active Army currently includes 10 heavy divisions.

Brigade--An organizational unit within a division capable of controlling up to five battalions, such as tank or infantry battalions.

Separate Brigade--A unit consisting of three or four combat (for example, tank, mechanized infantry, or light infantry) battalions. It is not assigned permanently to any specific division, but can be used to reinforce an individual division or corps when needed.

Battalion--A unit of several hundred personnel with a single function--for example, an artillery battalion, a tank battalion, or an air defense battalion.

Special Forces Group--An organization of about 3,000 people who are uniquely suited for limited objective operations primarily behind enemy lines or in support of guerrilla operations.

improvements came, of course, at a cost. From 1982 through 1986, the Army budget totaled \$325.1 billion of budget authority, or \$358.9 billion in 1987 dollars. Over the 1982-1986 period, the annual budget increased by 20 percent in real terms, an average annual growth rate of 4.8 percent (see Figure 1).

Despite this growth, the Army has not met all its goals. One reason is that the capabilities of the most formidable threat that the Army would have to face in a future conflict, the Warsaw Pact, continues to improve. In order to maintain the balance of military power, therefore, the Army would have to increase its capability and modify its goals. Also, goals established previously have not been met fully because the Army budget has fallen in real terms in the last two years (see Figure 1). Indeed, in real terms, the 1986 Army budget was 6 percent less than the budget appropriated in 1985 and 11 percent below the level requested by the Army. If the Army had additional funds to make the improvements it feels are needed, what would it do?

ARMY GOALS, 1987-1991

In response to a query from CBO, the Army specified its goals for further improvements from 1987 through 1991, in the areas of readiness, sustain-

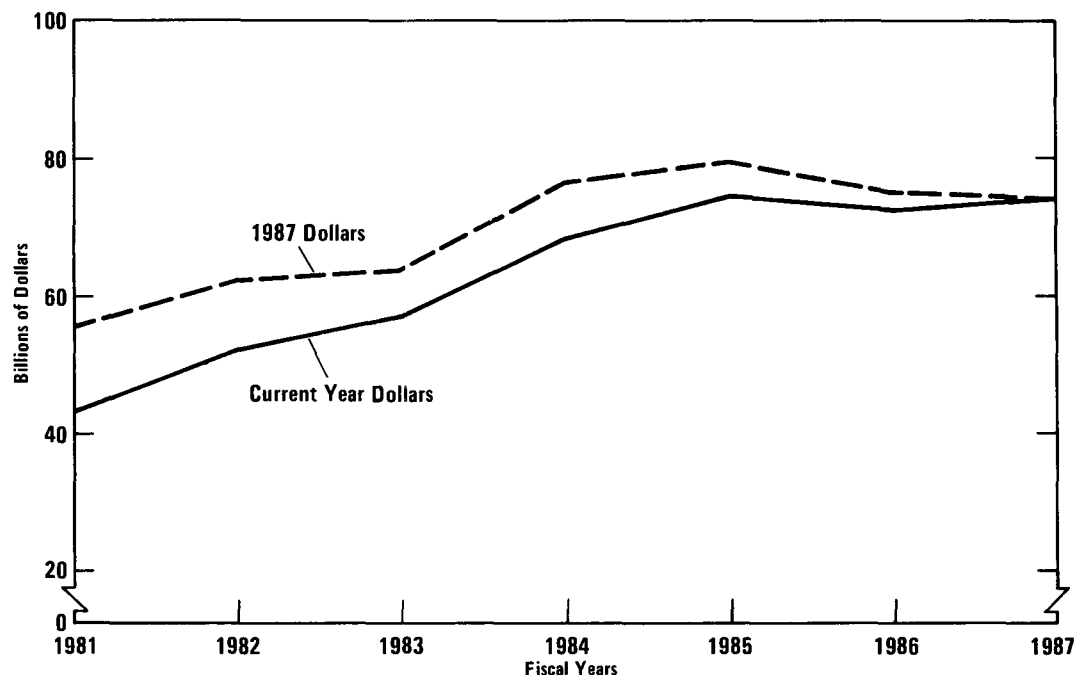
TABLE 2. ARMY FORCE STRUCTURE, FISCAL YEARS 1982 AND 1986

Force Structure	1982	1986
Number of Divisions		
Active	16	18
Reserve <u>a</u> /	8	10
End Strength		
Active	780,400	780,800
Army Reserve	256,700	310,700
National Guard	407,600	450,500

SOURCE: Comptroller of the Army, *The Army Budget, Fiscal Years 1985 and 1987* (February 1984 and 1986).

a. Includes divisions in both the Army Reserve and the Army National Guard.

Figure 1.
Army Budgets, Fiscal Years 1981-1987



SOURCE: Congressional Budget Office based on Office of the Assistant Secretary of Defense (Comptroller), *National Defense Budget Estimates for FY 1987* (May 1986).

ability, modernization, and force structure. ^{4/} The Army also provided some quantitative measures (for example, operating tempos) by which to assess improvements in each of the four categories. The CBO request did not specify that any particular fiscal limits had to be observed. Rather, broad goals--analogous to the Navy's goal of 600 ships or the Air Force's desire for 40 tactical fighter wings--were sought. Presumably the resulting goals reflect the forces and capabilities that the Army feels would be needed to ensure reasonable confidence of prevailing in future conflicts, tempered by some notions of what funds might possibly be available. On the other hand, these goals do not necessarily reflect near-term budget limitations that may be placed on the Army. Thus, the forces discussed below are not always consistent with those discussed in documents submitted in support of the President's budget.

4. Letter from Lt. Gen. Carl E. Vuono, Deputy Chief of Staff for Operations and Plans, to Mr. Robert Hale, CBO, February 1986.

The Army's goals, to be met between now and 1991, include:

- o Continued increases in training time for selected units, especially for pilots;
- o Continued increases in stockpiles of war reserves, with a goal of meeting 80 percent of the ultimate munitions objective by 1991;
- o Continued modernization of equipment, with emphasis shifting from attack systems to those that communicate and locate targets; and
- o Maintenance of 28 divisions--18 active and 10 reserve--with current numbers of active-duty soldiers but an increase of 7 percent in reserve personnel.

The Army's plan for the remainder of the 1980s is to maintain the same priorities for allocation of its resources that it has followed for the early part of the decade. Improvements in readiness have received and will, therefore, continue to receive emphasis through 1991. Next, the Army plans to increase its war reserve stocks and enhance its sustainability. Modernization of the Army's equipment will continue in order to maintain a technical edge over potential enemies. Finally, the Army will attempt to expand its reserve force structure. The remainder of this chapter describes these goals in more detail.

Readiness

The Army has framed its first priority goal of improving force readiness between now and 1991 in terms of several specific measures. These include the operating tempos of aircraft and ground fighting vehicles, the amount of funds allotted to property maintenance, the amount of material stored overseas in the POMCUS program, and the number of battalions training each year at the Army's National Training Center.

Operating Tempos. Time spent flying aircraft, driving a tank, or becoming familiar with equipment should increase a soldier's preparedness for battle. By extension, the more a unit trains together and the more realistic the training conditions, the more ready that unit will be to go to war. Thus, increasing operating tempos should increase the Army's readiness.

The Army plans to increase the average number of monthly hours each crew flies for both the active and reserve components (see Table 3). The

TABLE 3. AIRCRAFT OPERATING TEMPOS,
FISCAL YEARS 1986 THROUGH 1991

Tempos	1986	1987	1988	1989	1990	1991
Average Flying Hours per Crew per Month						
Active	14.0	16.8	18.0	18.8	19.5	19.5
Reserve	11.2	11.2	11.5	11.8	12.4	12.5
Total Flying Hours per Year (In thousands)						
Active	1,497	1,538	1,647	1,648	1,681	1,703
Reserve	413	459	495	518	557	576

SOURCE: Letter from Lt. Gen. Carl E. Vuono, Deputy Chief of Staff for Operations and Plans, to Mr. Robert Hale, CBO, February 1986.

most significant increase--5.5 hours per crew per month, or almost 40 percent from 1986 through 1991--is planned for the active component. The reserve monthly flying rate would increase only 1.3 hours per crew, or 12 percent, during the same period. The reserve component's total yearly flight hours, however, are scheduled to increase by a much greater fraction than those of the active component during the same time period (almost 40 percent for the reserves, compared with 14 percent for the active Army), reflecting the introduction of more aircraft and crews into the reserves during the next five years.

The Army does not intend to increase the operating tempos of its tanks and fighting vehicles. Rather, the number of miles that the Army drives systems such as the M1 and M60A3 tanks and Bradley Fighting Vehicles each year will remain relatively constant through 1991. ^{5/}

Real Property Maintenance. The Army owns many facilities, including some family housing units, that it must maintain. Well-maintained facilities improve troop morale by providing pleasant and efficient working and living

5. Operating tempos for ground systems for the active Army, National Guard, and Army Reserve will be maintained at 800 to 850 miles per year, 288 to 306 miles per year, and 200 to 213 miles per year, respectively.

areas. Rarely, however, does the Army have enough money to maintain all its facilities at desired levels. Therefore, a backlog of needed repairs to both real property and family housing, totaling nearly \$2 billion dollars in fiscal year 1986, has accumulated.

At a minimum, the Army wants to reduce the backlog for real property maintenance and repair to \$1.1 billion by 1991; a more ambitious goal would reduce the backlog to 20 percent of its annual recurring maintenance requirements or about 0.8 billion by 1991. Based on the latter goal, the Army projects the need for maintenance funding and resultant backlog levels summarized in Table 4.

The situation in Army family housing is similar to that of all the other facilities: because it had to defer repairs, the Army has created a backlog in needed maintenance. In an effort to prompt a reduction in these backlogs, the Congress has set a maximum, or containment, level for acceptable backlogs. The Army's goal is to reduce the level of deferred maintenance and repair for family housing below the Congressional containment level of \$294 million in current year dollars (which by 1991, would be equivalent to \$261 million in 1987 dollars) and, more ambitiously, below \$80 million (or \$71 million in 1987 dollars) by 1991. Army projected funding and backlog levels for family housing show that the Army does not expect to meet the more ambitious goal, but plans to achieve the more modest Congressional target (see Table 4).

TABLE 4. ARMY MAINTENANCE GOALS (By fiscal year, in millions of fiscal year 1987 dollars)

	1986	1987	1988	1989	1990	1991
Real Property Maintenance and Repair						
Required Funding	1,727	1,790	1,863	2,006	2,153	2,100
Resulting Backlog	1,449	1,296	1,202	1,002	875	819
Family Housing Maintenance and Repair						
Required Funding	583	615	754	625	563	576
Resulting Backlog	506	397	175	95	93	90

SOURCE: Letter from Lt. Gen. Carl E. Vuono, Deputy Chief of Staff for Operations and Plans, to Mr. Robert Hale, CBO, February 1986.

POMCUS. The Department of Defense (DoD) initiated the POMCUS program to speed deployment of U.S. reinforcements to Europe in the event of war by permanently storing in Europe the equipment associated with six Army divisions. Should these reinforcing divisions be needed in Europe, their personnel can be transported rapidly to Europe where a duplicate set of equipment would be waiting for them. The transferred personnel could then begin to fight shortly after arriving without waiting for their heavy, bulky equipment to arrive from the United States.

Not all the equipment for six divisions has yet been stored in Europe; indeed, in 1986, only 62 percent was in place. In 1984, the Congress, however, restricted the rate at which equipment can be placed in POMCUS. Concerned that diverting equipment to the POMCUS program could deprive some active and reserve units of modern equipment needed for training, the Congress directed the Army to defer supplying POMCUS for the 5th and 6th reinforcing divisions until active-duty units have at least 70 percent of their equipment and reserve units at least 50 percent. The Army's goal is to procure and place in POMCUS by 1991 an additional 25 percent of the requisite equipment, bringing the cumulative amount in storage to 87 percent of the final objective, while observing Congressional restrictions.

Training. Another Army goal affecting overall readiness concerns training of Army units, typically battalions, at the Army's National Training Center (NTC). This installation--covering 500,000 acres at Fort Irwin, California--enables entire Army units, such as tank battalions, to take part in simulated combat against sizable opposing forces employing tactics typical of Soviet units. Large-scale simulated battles, including supporting aircraft and live fire, enable combat units, most of whose members typically have not experienced actual combat, to train under the most realistic possible conditions short of war. Electronic devices record simulated "kills" using low-powered lasers to mimic bullets. Each side can evaluate its performance at the end of the day based on a detailed recording of everybody's movements and "shots" for the entire battle. This experience should provide Army units with invaluable preparation for actual combat, and the Army plans to continue sending 28 battalions to the NTC each year.

Sustainability

The ability to perform in combat for extended periods of time, referred to as sustainability, is another area receiving high priority for improvement. If U.S. forces became involved in a protracted conflict that involved intense combat, large amounts of ammunition, spare parts, and replacement equip-

ment would be needed. Reserves of such important components are designed to fill the Army's supply requirements until domestic facilities can begin to produce them in large quantities.

The most likely scenario that would include extended and intense fighting would pit NATO forces against those of the Warsaw Pact in Central Europe. Many doubts exist, however, about the likelihood of a Soviet invasion of Central Europe and the ultimate length of the ensuing combat if such an invasion should occur. The only recent examples of high intensity warfare, all limited to the Middle East, have been of short duration. Because one of the main purposes of U.S. conventional forces is to deter Soviet encroachment in Central Europe, however, the Army feels it must prepare adequately for such an eventuality, no matter how improbable. The Army has identified specific goals in the area of sustainability for the next five years. The following discussion of a few of the goals illustrate the Army's plans.

The need to stockpile munitions, and the Army's efforts to do so, was discussed above. By 1986, the Army had attained 85 percent of the dollar value of its total goal. That same year, however, the Army redefined its objective and, therefore, reevaluated its progress with respect to meeting that objective. Before 1986, the Army had assigned a total dollar value to the stock of munitions it felt were needed to sustain a war for a specified number of days. (The actual number of days in the Army's objective is classified.) Using this definition, the Army measured its progress toward its objective by the total dollar value of the ammunition it had stockpiled compared with the value of its ultimate goal, which was established by the Secretary of Defense. Recently, however, the Army has devised a scheme whereby it can compare its differing stocks of various munitions with its ultimate goal and assess how far it has progressed toward this end. Based on this new assessment method, the Army now feels that it has met only 65 percent of its total target for war reserves of munitions. In five years, the Army plans to have achieved 80 percent of this objective.

The Army has also identified other goals aimed at raising its ability to sustain combat. These include adding to the war reserve stocks of items such as spare aircraft and tank engines, transmissions, generators, and other repairable pieces of equipment known as "secondary items." The Army hopes to raise its war reserves of these items from the current level of 57 percent of its objective to 70 percent by 1991. The Army also plans to increase the amount of money it spends annually for maintaining and repairing equipment at its depots--referred to as depot maintenance and repair (DMAR)--from \$1.7 billion in fiscal year 1986 to \$2.1 billion in 1991. Finally, starting in

1988, the Army wants to fund a minimum of 93 percent of its depot material maintenance (DMM) program. 6/ The total level of DMM funding was \$1.7 billion in fiscal year 1986, which represented almost 100 percent of the requirement.

Modernization

Most of the major programs to modernize weapons initiated during the first half of the decade--for example, the M1 tank, the Bradley Fighting Vehicle, the AH-64 and UH-60 helicopters, and the multiple launch rocket system (MLRS)--will continue to be deployed in the field through the next five years (see Table 5). In addition, several new systems, primarily for communications or intelligence gathering, will also begin to appear in U.S. Army units. These new, electronically sophisticated systems will become the focus of the Army's modernization effort during the next decade. Many of these new systems, particularly those for communications and target acquisition, are needed to support many of the weapons that the Army has bought during the past decade. Since the Army's latest weapons are faster and able to shoot further than their predecessors, Army commanders will now need timely information on the enemy's whereabouts and will then need to relay that information rapidly to the appropriate individual weapon system. In fact, the previous commander of the Army's Training and Doctrine Command, Gen. William R. Richardson, stated that his candidates for the Army's five most important new weapon systems included only one attack system. Four of his preferred systems would be used for locating targets, combining data from various sources, and communicating among various units in the Army. 7/

The Army plans to field three of General Richardson's candidates by 1991. Specifically, the Army plans to equip several units with the Army tactical missile system (ATACMS), the single-channel ground and airborne radio system (SINCGARS), and the mobile subscriber equipment (MSE) communication system. Deployment plans for these plus seven other new systems are described in Table 5. Within the next few years, the Army also

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6. As opposed to the depot maintenance and repair program which maintains the actual depots themselves, the DMM program reconditions items, such as tank engines, so that they can be returned to the supply system.
 7. General Richardson identified the Army tactical missile system (ATACMS), joint surveillance and target attack radar system (JSTARS), all-source analysis system (ASAS), mobile subscriber equipment (MSE), and single-channel ground and airborne radio system (SINCGARS) as the five major new hardware developments in the Army in an interview published in the *Armed Forces Journal* (May 1986).

TABLE 5. ARMY WEAPONS MODERNIZATION (By fiscal year)

System	Assigned Army Unit	Number of Systems Per Unit	Cumulative Number of Units Fielded (Including those for Active, Reserve, and POMCUS)				
			1986	1987	1988	1989	1990
M1 Tank	Battalion	58	35	46	58	70	80
Bradley Fighting Vehicle	Battalion or Cavalry Squadron	50-54	25	31	37	44	55
AH-64 Helicopter	Battalion	18	2	9	16	21	30
UH-60 Helicopter	Company	15	34	38	41	47	53
MLRS/ATACMS a/	Battery	9	12	27	30	37	41
Patriot Missile							
Fire Unit b/	Battery	1	21	30	42	54	64
M9-ACE c/	Engineer Battalion	25	1	1	1	3	8
SINCGARS d/	Division	4,439	0	0	2	4	4
MSE e/	Corp	9	0	0	0	1	3
RPV f/	Battery	13	0	2	4	6	8

SOURCE: Letter from Lt. Gen. Carl E. Vuono, Deputy Chief of Staff for Operations and Plans, to Mr. Robert Hale, CBO, February 1986.

- MLRS/ATACMS = multiple-launch rocket system/Army tactical missile system.
- Includes allied units.
- The M9-ACE is an armored bulldozer designed to construct defensive earthworks for tanks and fighting vehicles. The reserves will receive only company-size units equipped with 10 M9-ACEs beginning in fiscal year 1991. Active infantry divisions will receive only 19 M9-ACEs per battalion, and light infantry divisions will have 10 M9-ACEs per battalion.
- SINCGARS = single-channel ground and airborne radio system.
- MSE = mobile subscriber equipment.
- RPV = remotely piloted vehicle.

hopes to field a remotely piloted vehicle (RPV) to fly over the battlefield and locate enemy units. (See the following box for brief descriptions of these 10 Army systems.)

ARMY SYSTEMS

M1 Abrams Tank--The newest Army tank, which entered production in 1979, weighs 60 tons and has a 105mm main gun. A modified version, currently being fielded in Europe, has a 120mm main gun capable of more accurate, longer-range shots.

Bradley Fighting Vehicle--This new vehicle for the Army's infantry units first produced in 1980, can carry a nine-man squad. It is also equipped with a 25mm gun capable of penetrating light armor and an antitank missile launcher. The Bradley, with a top road speed of 42 mph, is capable of keeping up with the M1 tank.

UH-60 Black Hawk Helicopter--The Black Hawk is the Army's new utility helicopter, replacing the smaller, Vietnam-era UH-1 "Huey." It can carry 11 combat equipped troops or 2,640 pounds of cargo at a speed of 145 knots for 2.3 hours.

AH-64 Apache Helicopter--The Apache is the Army's newest attack helicopter, having entered production in 1982. It is equipped with the latest target finding equipment and can operate both day and night. The Apache is armed with Hellfire antitank missiles, rocket pods, and a 30mm gun.

Patriot Air Defense System--Patriot has replaced the Nike-Hercules as the Army's long-range air defense weapon. It is capable of guiding missiles to several targets simultaneously. Patriot forms the front line of defense against high performance aircraft in the central European theater.

Stinger Missile--Stinger is a shoulder-fired missile that can be used to destroy aircraft flying at low altitudes. It is a short-range missile, guided to its target by heat emissions from the aircraft's